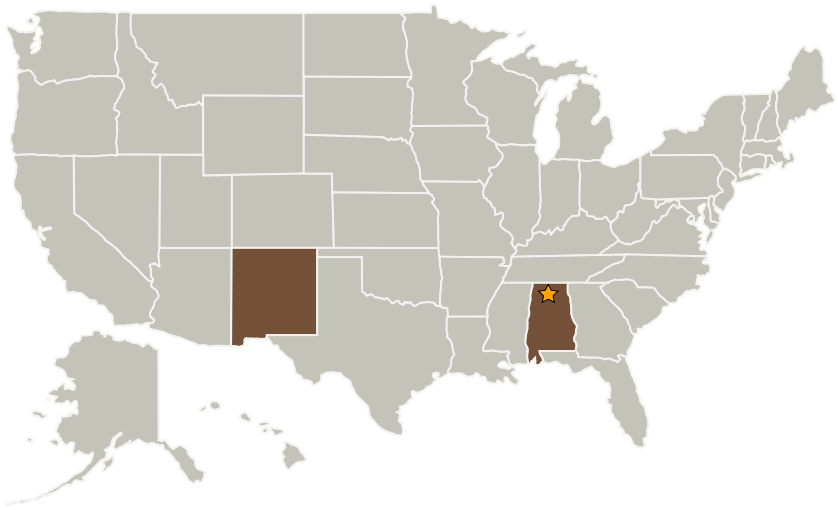
Light-Curing Structural Tape for In-Space Repair, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

NASA has numerous requirements for in-space repair capabilities to aid future missions beyond earth orbit. A subset of these requirements is adhesive patch materials that provide permanent or temporary repair of a wide variety of surfaces with minimal surface preparation. Prior work on light (UV and visible) curing composite matrix resins for rigidizing inflatable spacecraft shows that there is an opportunity to use similar technology for in-space repair kits. Light curing provides a controlled, clean, low power rigidization technology to harden repair patches. Rapid cure at low temperatures (-20?aC) has been demonstrated with these specialty resins. They are also low outgassing, 100 percent solids materials with no hazardous ingredients. Repair kits for light-curing tape can be tailored for a wide range of applications. This concept for !? structural duct tape!? provides a means of producing glass fabric repair patches impregnated with safe, visible light-curing resins that cure rapidly with low power using hand held light emitting diode (LED) arrays or similar light sources. The tape will be housed in a light and radiation resistant, easy to use dispenser. A companion battery powered LED array will complete the kit. Surface cleaning materials can also be included.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Adherent Technologies, Inc.	Supporting Organization	Industry	Albuquerque, New Mexico

Primary U.S. Work Locations	
Alabama	New Mexico

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes